



ANNUAL REPORT

OF THE

**Antigua Agricultural Department
(Leeward Islands Colony)**

FOR THE YEAR

1954.



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STAFF AS AT 31ST DECEMBER, 1954.

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Head Clerk	MISS H. BELL

FRIAR'S HILL STATION.

Manager	R. L. V. HALL
Farm Foreman	R. FRANCIS

GREENCASTLE NURSERY AND FRUIT FARM

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Assistant Curator (Temporary)	F. MARGETSON
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FISHERIES.

Fisheries Officer	R. V. CAMACHO (Acting)
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PROTECTION SERVICE.

Protection Officers	P. BLANCHETTE K. PIGOTT (on study leave) P. HODGE (Acting)
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INTRODUCTION.

One of the recommendations made at the Conference of Colonial Directors of Agriculture held at Wye in September, 1953, was that Annual Reports of Colonial Departments of Agriculture should be prefaced by an introduction in which should be discussed both the progress made in accumulating the basic knowledge needed for the formulation of agricultural policy and the current trends in the various aspects of accepted Government policy for agricultural development.

It is a matter for regret that in the absence of trained staff, the Department of Agriculture has been able to undertake no basic research during the year. In the field of the furtherance of the accepted Government policy for development, however, it is gratifying to report substantial progress. The amalgamation of all activities in connexion with peasant settlements into the Peasant Development Section of the Department of Agriculture at the beginning of 1954 has led to an overall improvement in administration and marked progress both in the extent and quality of peasant settlement agriculture as can be seen from the appropriate section of the report. Satisfactory beginnings have also been made in the field of Livestock and Fishery Development.

SECTION I

REVIEW OF AGRICULTURAL PRODUCTION

(A) ANTIGUA.

(Population approximately 48,000)

- 1.1. WEATHER. The average rainfall from 50 stations was 33.93 inches and was 4.17 inches below the average for the period 1933—1954 (43.10 inches). The lowest rainfall (25.53 inches) was recorded at Body Ponds in the south-centre of the Island and the highest (58.78 inches) at Fitches Creek on the north-east coast.

The rainfall for the first two months of the year was normal but this was followed by a period from March to July when there was a notable short-fall from the average. Good rains, however, fell in the main planting season of from August to October, although there was again a slight short-fall in November and December. The good rains which fell from August to October were most welcome as the dry weather of the early part of the year which followed the unusually dry year of 1953 had led to considerable misgiving. The rains saved the

sugar crop, which made a marked recovery, and permitted a considerable extension in the area planted with cotton. Vegetable and provision crops, which had been in short supply during the first half of the year, became readily available once more.

There were no tropical disturbances affecting Antigua during the year.

Appendix I shows the monthly rainfall as recorded at 50 stations during 1954.

Appendix II shows the average monthly rainfall for the period 1933—1954.

1.2. SUGAR. The dry weather of 1953 was responsible for a marked reduction in the production of sugar in 1954. During this year, the Antigua Sugar Factory produced 12,504 tons grey crystals and 641,875 gallons final molasses from 104,971 tons of cane ground. The sugar out-turn was 1 ton of sugar to 8.33 tons of cane. Harvesting commenced on 22nd March and finished on 7th July. The Montpelier factory did not operate this season.

The percentages of different varieties reaped in 1953 and 1954 are as follows :

TABLE II.

<i>Variety</i>	<i>1953</i>	<i>1954</i>
	%	%
B4098	75.01	83.54
B37161	17.37	11.31
B3439	3.80	2.19
B34104	1.20	0.83
B37172	1.23	2.08
Others	1.39	0.05
	100.00	100.00

The expansion of the area under B4098 was maintained. The area under this variety which is well suited to Antigua conditions was 1.4 per cent in 1947, and 35.17 per cent in 1950.

The area of sugar reaped in 1954 was 11,750 acres and from this area 104,971 tons of cane were secured giving an average yield per acre of only 8.93 tons of cane per acre and a yield of sugar per acre of 1.07 tons. These yields are the lowest for many years.

Table III below gives details of sugar production for the period 1941—1954.

TABLE III.

SUGAR PRODUCTION — ANTIGUA.

Year	Acres Reaped	Tons (long) Grey Crystals	Tons (Long) Muscovado	Average yield Tons Cane per acre	Tons Cane per Ton Sugar	Tons Sugar per acre
1941	11,374	17,584	166	12.9	8.23	1.55
1942	11,703	21,979	193	16.5	8.71	1.89
1943	9,187	21,867	208	18.7	7.79	2.39
1944	8,525	16,279	125	14.3	7.47	1.92
1945	8,823	20,663	72	16.8	7.15	2.35
1946	9,560	26,024	122	20.7	7.57	2.73
1947	10,267	22,746	100	17.5	7.87	2.22
1948	8,782	12,174	—	11.5	8.32	1.38
1949	8,494	18,263	75	18.2	8.43	2.15
1950	11,800	30,681	422	21.3	7.83	2.64
1951	9,960	18,511	397	17.4	9.20	1.90
1952	12,422	33,684	562	23.9	8.64	2.75
1953	12,650	31,588	530	19.5	5.76	2.52
1954	11,750	12,504	—	8.93	8.33	1.07

Of the 1954 crop of sugar 11,048 tons were purchased by the Ministry of Food at a negotiated price £41 (\$196.80) per ton c.i.f. United Kingdom: this price includes \$13.20 per ton retained as a cess by the Government of Antigua for Price Stabilisation, Rehabilitation and Labour Welfare. The remainder of the crop was sold for local consumption. 609.310 gallons of molasses were sold for export at 7½ cents per gallon and the remainder was sold locally, chiefly for rum production.

The Antigua Sugar Factory paid non-contracting suppliers £2. 7. 8 (\$11.44) per ton of cane and contractors, including Peasant Settlements £2. 7. 9 (\$11.46) per ton of cane. The reason for the close approximation of the prices was the fact that the crop was so poor that the factory made a loss on working during the year.

The area estimated to be reaped in 1955 is 10,827 acres and the production of sugar for 1955, as adjudged at the end of 1954, is estimated at 22,353 tons grey crystals.

1.3. COTTON. The 1953-54 cotton crop was a poor one owing to unfavourable weather in the early and late stages of growth. Cotton was harvested from 2,860 acres and amounted to 278,567 lbs, clean lint, of which 235,612 lbs was MS1 (Montserrat Sea Island variety) and 42,955 lbs was VH8 (longer staple variety). The entire crop of clean lint was sold to the Raw Cotton Commission at 84 cents a pound for Grade 1 MS1 and 94 cents a pound for Grade 1 VH8, both with one cent differentials. Stained cotton amounted to 15,900 lbs, a proportion higher than in the previous year but again associated

with unfavourable weather conditions. This stained cotton was sold locally at 44¢ per lb. Cotton seed was sold to Montserrat for crushing at \$50 per ton.

Table IV gives comparable statistics covering the last ten years.

TABLE IV.

ANTIGUA COTTON PRODUCTION 1945 — 1954.

SEASON	<i>Acreage Reaped</i>	<i>Clean lint produced lb.</i>	<i>Lint lb. per acre</i>	<i>Price of Lint Grde 1 cents</i>	<i>Stains produced lb.</i>
1944-45	1,129	189,992	170	48	2,302
1945-46	1,113	282,502	253	44	3,702
1946-47	498	77,376	155	54	10,525
1947-48	1,554	208,678	134	66	9,617
1948-49	3,550	873,564	246	78	51,300
1949-50	3,949	776,153	196	80	64,125
1950-51	4,015	831,143	207	90	41,700
1951-52	3,906	577,773	147	1.11	39,900
1952-53	1,300	277,204	213	78	7,986
1953-54	2,860	278,567	97	86	5,900

The quality of the cotton was well maintained as is shown in Table V which gives the gradings in recent years. It should be noted that VH8 was not produced on a significant scale before 1951. All this variety is produced on estates whereas most of the MS1 cotton is produced by peasants. Various factors, mainly demand, preclude the great extension of the area planted with VH8.

TABLE V.

COTTON GRADING.

(Bales of about 300 lb)

M S 1 Grades												
SEASON	G1	G2x	G2	G3x	G3	G3 s.s	G4x	G4	G5x	G5	G6	Total
1948-49	48	146	392	310	1053	193	442	279	2	5	1	2,871
1949-50	27	118	354	484	1135	—	92	230	7	17	—	2,464
1950-51	240	275	1066	329	585	—	49	65	7	1	—	2,617
1951-52	78	252	513	288	324	—	24	74	4	3	—	1,560
1952-53	23	52	621	33	39	—	4	1	—	—	—	773
1953-54	36	102	541	44	33	—	3	—	—	—	—	759

V H 8 Grades

	<i>MG1x</i>	<i>MG1</i>	<i>MG2x</i>	<i>MG2</i>	<i>MG3x</i>	<i>MG3</i>	<i>MG4x</i>	<i>MG4</i>	<i>MG5x</i>	<i>Total</i>
1951-52	2	62	55	63	70	30	14	4	1	301
1952-53	1	—	11	91	15	7	—	—	—	125
1953-54	11	—	64	55	9	2	—	—	—	141

The Department of Agriculture continued to be the sole purchaser of seed cotton and to exercise supervision of all cotton going to the ginneries.

The incidence of cotton pests, particularly of pink boll-worm, was again checked to a great extent by the imposition of a close season for cotton from 15th May to 15th August. During this period all remains of the previous cotton crop must be destroyed, no cotton or related plants may be planted and efforts are made to destroy wild cotton plants in which pests may be maintained. This work is under the control of the Protection Officers of the Department and legal action was taken against 176 offenders. There is, however, a growing appreciation among peasant cultivators of the importance of the strict observance of the close season.

The favourable weather in August, which continued through the planting season, led to a great expansion of cotton planting for the 1954-55 season and the area under cultivation is the greatest recorded in Antigua. Peasants have planted 4506 acres of MS1 and estates 733 acres mainly of VH8. The crop has grown well. There was a small outbreak of the leaf-worm in the Piccadilly area which was brought under control quickly and green bug has caused some damage.

Pink boll-worm and the stainer bug have not been greatly in evidence.

The Raw Cotton Commission will no longer purchase Antigua cotton and it has therefore been necessary to revert to normal commercial practice. In this, the Advisory Committee of the West Indian Sea Island Cotton Association have rendered invaluable assistance in setting up a small Consultative Committee who have negotiated the sale of the coming crop with buyers in England. Prices secured have been very satisfactory, namely, \$1.12 per lb for Grade 1 MSI cotton and \$1.24 per lb for VH8, with the usual one-cent differentials for lower grades. With these prices and every prospect of a record crop, estimated to be about 1¼ million pounds, the situation is most gratifying.

One General Meeting of the Antigua Cotton Growers Association and 17 meetings of the Board of Management were held during the year. The Annual General Meeting of the West Indian Sea Island

Cotton Association was held in Antigua and the Antigua Cotton Growers Association was represented by Mr. N. Richards.

1.4. **FOOD PRODUCTION.** The dry weather in the first half of the year, following on the very dry year of 1953, restricted the growing of food crops. Cultivation was, however, stimulated by the guarantee of minimum prices and the marketing organisation at the Peasant Development Office, where food crops were both bought and sold, provided a useful check on exploitation of both the producer and the consumer. The extent to which advantage was taken of these facilities can be judged by the figures given later in the report.

The raising of seedlings of vegetables, particularly onions, tomatoes, and cabbage in departmental nurseries was increased in order to stimulate production. Unfortunately, the great expansion of cotton cultivation and the dry weather in November and early December restricted the area under vegetable crops, especially onions, and many seedlings which had been raised for issue to peasants had to be destroyed. There was, however, at the end of the year an abundance of vegetable produce in the market and consideration is being given to export, particularly of tomatoes, in future years.

(B) BARBUDA.

(Population 1,147)

- 1.5. There is no officer of the Department of Agriculture stationed at Barbuda and the following notes are extracted from the report of the Warden, Mr. R. S. Byron.

RAINFALL. The total rainfall for the year, as measured at Codrington, was 31.17 inches, details of which are given in Appendix II. It will be seen that the rainfall for the first seven months of the year totalled only 7.55 inches but good rains fell in August, September and December. No rain was recorded in November.

COTTON. The production of cotton was again small although it was about twice as much as the 1953 crop. It appears that the average peasant considers this crop too difficult to cultivate and its returns too uncertain because of the possibility of pests or adverse weather conditions. There are indications, however, that a larger acreage has been planted for the 1954/55 crop. Clean seed cotton was purchased at 14 cents a pound and a final payment was made of 6.9 cents a pound.

FOOD CROPS. Peas and beans were badly affected by drought conditions early in the year and this led to the marked fall in the quantities exported. With the late rains, however, there was promise of a good crop in 1955.

There was some cultivation of corn, but none was exported as the price offered was not considered sufficiently remunerative and the growers held their crop for local consumption.

The Department pursued steadily the cultivation of demonstration plots at Guava, as well as in the enclosure at Codrington, of cabbages, carrots, beet, cauliflower, string beans, lettuce, tomatoes and onions. Seedlings were raised and distributed to peasants desiring them. Interest in growing was displayed mainly in cabbages. Dieting habits in Barbuda still resist the consumption of carrots, beet, lettuce and, to some extent, cauliflower.

LIVESTOCK. The very poor figures shown in Table VI for animals exported during the year are indicative of the fact that livestock suffered very badly from drought conditions. Pastures became scorched and withered and from early in the year animals died of starvation, particularly sheep and goats. Two young Zebu bulls were acquired by Government for stud purposes and arrived in Barbuda during the year. They have been allowed to run with other animals.

The Livestock Development Scheme (Colonial Development and Welfare No. 2122) was initiated during the year. A total of \$6,603.90 was spent on the scheme, mainly on the repair of catching pens, in eight of which substantial work was done. Much cleaning was also carried out in preparation for the extension of the main wire-line and for the fencing of the new grazing area. The scheme is controlled by the Veterinary Officer while its local executive is the Livestock Officer. Fortnightly reports are submitted.

Table VI shows the exports of Agricultural products from Barbuda. The exports are chiefly to Antigua.

TABLE VI.
EXPORTS FROM BARBUDA

<i>Commodity</i>	<i>1953</i>		<i>1954</i>	
	<i>Quantity</i>	<i>Value</i>	<i>Quantity</i>	<i>Value</i>
		\$		\$
Cotton (lb)	873	160	1,589	332
Charcoal (bags)	7,881	13,239	6,362	12,724
Salt (bags)	180	720	217	759
Cattle	44	6,600	26	3,500
Sheep	148	976	86	560
Goats	370	1,480	144	576
Pigs	14	520	5	160
Horses	8	300	2	70
Mules	7	1,050	—	—
Donkeys	45	900	12	240
Peanuts (lb)	6,800	240	700	210
Peas & Beans (lb)	6,000	1,800	550	110
Brooms (bundles)	552	799	638	957
Manure (bags)	—	—	2,195	1,580
Timbers	—	—	170	60
Turtle	—	—	23	552

SECTION II.

AGRICULTURAL STATIONS.

A. FRIARS HILL

2.1. GENERAL. The activities of this section of the Department centred chiefly around the harvesting of 1,534 tons sugar cane, the establishment of 97 acres plant cane, the maintenance of 104 acre ratoons for the 1955 crop and the preparation and planting approximately 40 acres of early canes for the 1956 crop.

In addition a total of 13,021 pounds of seed cotton was harvested from approximately 16 acres, and 16 acres were planted for the 1955 crop.

The drought conditions which prevailed for many months caused all livestock to lose condition. This was particularly noticeable in the cattle. When the rains came, however, these animals regained condition quickly. As a result of the drought conditions it was decided when rains came to rest the grazing areas, thus giving them an opportunity to re-establish themselves. To achieve this it became necessary to pasture the cattle on the hay-field for many weeks. In spite of applying fertilizer, this grazing coupled with poor rainfall during the last part of the year, resulted in a very poor stand which was not worth harvesting. In consequence, ten tons of hay had to be imported from Canada to augment the food supply.

Most of the building have been repainted and minor repairs effected. The Manager's house, Stockman's kitchen and the Cow Shed are still in need of urgent repairs.

Fences and pipe lines have received constant maintenance. Several hundred feet of piping have been replaced.

No serious labour disputes arose during the year.

2.2. WEATHER CONDITIONS. The rainfall during the year appears to have been governed by the hurricane season and, although the total rainfall was greater than that of the previous year, it was below average, as can be seen from the table below.

TABLE VII.
MONTHLY RAINFALL, FRIAR'S HILL.
(Inches)

Month	1950	1951	1952	1953	1954
January	5.41	3.60	2.41	1.93	3.04
February	2.58	1.88	1.60	1.02	2.45
March	1.58	1.09	1.62	5.60	1.08
April	2.44	2.16	3.14	2.06	0.49
May	2.06	10.54	3.07	1.50	3.83
June	1.66	2.74	5.74	1.31	3.32

<i>Month</i>	<i>1950</i>	<i>1951</i>	<i>1952</i>	<i>1953</i>	<i>1954</i>
July	1.85	3.28	8.38	3.20	3.47
August	10.71	9.18	8.43	3.15	5.93
September	6.34	12.06	5.55	2.10	9.91
October	5.13	3.90	5.19	.85	4.62
November	4.43	3.67	5.19	5.24	1.54
December	2.64	7.36	2.03	3.41	3.08
Total	46.77	61.46	52.35	31.37	42.76

2.3. LAND USAGE. The following table shows the disposition of the land at Friar's Hill as at the end of the year:—

<i>USE</i>				<i>Acreage</i>
Cane (Commercial)	..	..		201.40
Food Crops (multiplication)	..	..		1.00
Paddocks	..	..		133.21
Scrub bush paddocks	..	..		166.94
Vegetable garden	..	..		1.80
Fodder Crops	..	..		4.05
Cotton	..	..		16.00
Hay	..	..		12.00
Land fallow	..	..		11.60
Central Cotton Station	..	..		34.00
Prison Garden	..	..		18.00
Total	..	..	..	600.00

2.4. SUGAR CANE. A crop of 1,534 tons of sugar cane was harvested with an average yield of about 8½ tons per acre. This low yield, which was only about one-third of that secured in a normal year, was due to drought conditions which prevailed during the greater part of the crop's growth period. Similarly, low rainfall and poor distribution is likely to affect adversely the 1955 crop which was quite promising in the early stages. Details of the cane harvested in 1954 and the area to be harvested in 1955 are given below.

Cane Harvested in 1954

<i>Type</i>	<i>Acreage</i>	<i>Yield tons</i>	<i>Yield per acre tons</i>
Plant cane	61.3	686.2500	11.20
1st Ratoon	58.5	483.0375	8.26
Other Ratoons	59.0	364.4250	6.18
	178.8	1533.7125	8.62 (average)

Area to be Harvested in 1955

<i>Type</i>		<i>Acreages</i>
Plant cane	.. ..	97.2
1st Ratoon	.. ..	65.7
Other Ratoons	.. ..	38.5
		201.4

Comparative figures 1950 — 1954

<i>Year</i>	<i>Acreage</i>	<i>Total Tonnage</i>	<i>Yield per acre</i>
1950	—	583†	—
1951	102	2695	26.00
1952	156	4253	27.26
1953	184	4595	25.00
1954	179	1534	8.00

† Reaped chiefly from nurseries and experiments.

- 2.5. COTTON. The only cotton grown on the Station is an area of 16 acres planted with pedigree VH8 seed supplied by the Cotton Officer, Central Cotton Station. The seed produced from this area provides planting material for the bulk of estate cotton in the following season. The yield in the 1953-54 season was 13,021 lb. seed cotton with an average of 814 lb. per acre.

An area of 16 acres was planted again for the 1954-55 season with pedigree VH8 seed. The crop looks promising.

- 2.6. WATER SUPPLIES. Due to the pond becoming dry, well-water had to be used for livestock. To achieve a dependable output, and not to be entirely dependent on wind, a deep-well unit was installed which was capable of being fitted to a mechanically driven water-head. This source amply supplied the needs until the pond could be used again.

The high-speed gasoline driven water pump at the 60,000 gallon cistern has been giving mechanical trouble for some time. It is hoped to replace this unit by a windmill during 1955.

Several hundred feet of new piping was installed. Very little of the old iron piping remains to be replaced.

- 2.7. FOOD CROPS. The area solely under food crops was again restricted to 1 acre, which was used primarily for the multiplication of planting material. Some maize was planted through plant cane and a crop of 2,400 lb. was secured from 9 acres.

the year:—

The following seedlings were distributed from the station during

Tomatoes	..	..	25,000
Cabbages	..	..	30,000
Beetroot	--	..	1,000
Onions	..	..	222,000

2.8. LIVESTOCK. (a) CATTLE. The prolonged drought caused these animals to lose condition. When the rains came however, they quickly regained lost weight.

The breeding up of the Nelthropp herd continues to make favourable progress.

The $\frac{1}{2}$ Red Poll x $\frac{1}{2}$ Nelthropp cows and heifers, previously termed $\frac{3}{4}$ Red Poll x $\frac{1}{4}$ Senegal, were continued to be put to Churchill, a bull of similar grading. Eventually it is proposed to replace this herd with selected pure Nelthropps, which it is felt are more suitable to our conditions.

By the putting of three young $\frac{1}{2}$ young Red Poll x $\frac{1}{2}$ Nelthropp cows to the Pure Bred Red Poll bull, a start was made in the breeding of an experimental herd of $\frac{3}{4}$ Red Poll x $\frac{1}{4}$ Nelthropp.

(b) HORSES. Due to the little use, and general lack of interest in horse breeding it was decided to dispose of some of these animals.

As a result of this decision, Red Cap, the Pure Bred light French Canadian Draft and a half bred brood mare was sold to Montserrat. A half bred stallion was also sold to Barbuda.

Nelly, the pure-bred brood mare, gave birth to a filly during the year.

(c) DONKEYS. The pure bred Jack, has maintained his good condition, and has been used on both horses and donkeys.

Captain, the young Jack loaned to Barbuda, was purchased by them during the period.

During the severe drought Wild Fly gave birth to a Jack which died some time after.

(d) SHEEP. The pure bred Black-faced Persians, local and imported, continue to do well and are maintaining their condition excellently.

The half bred ewes have been put back to the pure bred rams but the lambs from this cross still lack the clearly defined markings of the pure-breds.

(e) GOATS. These animals continue to do well. The demand for them remains good.

(f) PIGS. Two sows and one boar were maintained. Three litters were farrowed during the year. The total number of piglets born was 25 — of these 3 died. All were readily sold.

It is hoped to import a young Berkshire boar to replace the present one.

NUMBER AND SEX OF ANIMALS MAINTAINED DURING THE YEAR

CATTLE

Pure Bred Red Poll Bulls							2
$\frac{3}{4}$ " " " x $\frac{1}{4}$ Nelthropp	Heifers	..	..				3
$\frac{1}{2}$ " " " x $\frac{1}{2}$ " "	Bulls	..	..				2
$\frac{1}{2}$ " " " x $\frac{1}{2}$ " "	Bull Calves	..	..				12
$\frac{1}{2}$ " " " x $\frac{1}{2}$ " "	Cows	..	..				15
$\frac{1}{2}$ " " " x $\frac{1}{2}$ " "	Heifers	..	..				9
$\frac{1}{2}$ " " " x $\frac{1}{2}$ " "	Heifers Calves	..	..				5
Pure " Nelthropp Bulls		..	..				2
" " " Bull Calves		..	..				1
" " " Cows		..	..				13
" " " Heifers		..	..				2
" " " Heifer Calves		..	..				3
							69

HORSES

Pure Bred Stallion	..	..	—
" " Brood Mares	..	..	1
$\frac{3}{4}$ Bred " "	..	..	2
Pure Bred Colts	..	..	1
$\frac{3}{4}$ Bred Colts	..	..	1
Pure Bred Fillies	..	..	3
$\frac{3}{4}$ Bred Fillies	..	..	1
			9

DONKEYS

Pure Bred American Jacks		1
$\frac{3}{4}$ Bred American Jacks	..	1
$\frac{7}{8}$ Bred American Janny	..	1
Graded American Jenny	..	1
$\frac{3}{4}$ Bred American Janet	..	1
		5

SHEEP

Pure Bred Black Head Persian Rams		12
" " " " " Ewes		19
Graded "Black" Head "Persian" Rams		1
" " " " " Ewes		6
Native Ewes	..	4
		42

GOATS

British Alpine Bucks	..	..	3
" " Does	..	..	2
Graded Bucks	..	..	15
" Does	..	..	12
			22

PIGS

Sow	..	..	2
Gilts	..	..	1
Boars	..	..	1
			4

ANIMALS SOLD

Cattle	..	..	..	34
Horses	..	..	..	4
Donkeys	..	..	..	1
Mules	..	..	..	1
Goats	..	..	..	21
Sheep	..	..	..	21
Pigs	..	..	..	24

STUD SERVICES

The following services were rendered:—

<i>Stud Animals</i>	<i>No. of Services</i>
Stallion	1
Jack	4
Boar	10

B. GREENCASTLE NURSERY AND FRUIT FARM

2.9. GENERAL. The rainfall figures for 1954 show that for the greater part of the year Greencastle experienced very dry conditions which retarded progress considerably and during this period a good deal of work was devoted to the maintenance of crops and nurseries.

2.10. VEGETABLE GARDEN. Tomatoes, cabbages, cauliflowers, carrots, beets, onions, sweet peppers, string beans, lettuce, squashes, broccoli, corn and sweet potatoes were grown with moderate success and were easily marketed. A half acre of lima beans failed, due to aphid attack, and two acres of tomatoes were destroyed by *Nezara*. Egg plants and cucumbers also succumbed to aphid and wilt. (Cabbages also sustained heavy losses as D.D.T. Emulsion, the only successful remedy for cabbage-worm, was not available). Sweet potatoes reaped at the end of the year found an already glutted market.

2.11. SEEDLING NURSERY. During the previous year the Station could hardly cope with the demand for seedlings so in 1954 seedlings were

raised in larger quantities. It appears however, that peasants and estates concentrated on cane and cotton and consequently, hundreds of thousands of seedlings, especially tomatoes and onions, which were ready for sale at the proper time became overgrown and had to be discarded.

2.12. ECONOMIC PLANTS DISTRIBUTION. Arbor Day 1953 was postponed to January 1954 so that the \$1000.00 worth of plants distributed left the nurseries empty and delayed preparations for Arbor Day 1954. A large quantity of breadfruit root cuttings were obtained from Montserrat but most of these failed due to dry conditions (and perhaps chlorinated water). "T" budding of citrus and bottle grafting of mangoes was successful. Early in the year 1000 seed coconuts arrived from Nevis and plants from some of these, though small, were among those distributed on Arbor Day along with budded citrus and mango seedlings, limes, avocado pears, soursops, solo Hawaii papaw, Malacca apple, Java plum, cocoa, and breadfruit, all yielding a total of \$2,000.00.

2.13. ORNAMENTAL PLANTS. There was a decided decrease in the output of ornamental plants as the demand was small and germination in sandbeds and seedboxes was poor. Due to lack of transportation it was usually difficult to obtain cuttings and supplies often ran short. Bougainvillas and hibiscus and other flowering shrubs sold as soon as they were strong enough to be planted.

Pots were obtained from Sea View Farm and the Antigua Potteries.

2.14. OUTPUT FROM GREENCASTLE NURSERY. The following seedlings were issued during the year:

(a) VEGETABLES

Onion	95,539	Beet	3,175
Tomato	49,315	Lettuce	775
Cabbage	30,745	Broccoli	100
Cauliflower	3,747	Sweet Pepper	75
Egg Plant	4,230		

Total 187,701 — a decrease of 469,300 on the previous year. The seedlings were available but there was no demand.

(b) ECONOMIC PLANTS

Coconut	2,050
Grated mango	300
Budded citrus	191
Limes	840
Bread Fruit	192
Miscellaneous fruit	639
Total	<u>4,212</u>

(c) ORNAMENTAL

Ornamental trees	748
Flowering shrubs	968
Miscellaneous decorative plants	442
	2,158

2.15. ORCHARDS. Many of the smaller mango trees suffered and a few of them died. In spite of the drought, however, the two orchards yielded a total of over 15,000 marketable fruit.

The citrus trees, especially the Washington Navel orange, dropped blossoms or small fruit. Only a small percentage of the fruit which ripened were edible. The majority had split skins and were dehydrated.

Small plots of banana, sapodilla, papaw, avocado pears, Malacca apple, and breadfruit trees yielded nothing during 1954.

The small plot of pineapples which was extended with Antigua black plants from Cades Bay also yielded nothing.

2.16. TOBACCO. Plans were made to establish a tobacco crop in September but seed from the Jamaica Agricultural Department failed to germinate in the nursery and the importation of seed from Puerto Rico was prohibited.

A barn for flue-curing tobacco was built on the station with the aid of Colonial Development and Welfare funds but the burner had not arrived at the end of the year.

Notes on the result of the 1953-54 experimental work are given later in the report.

2.17. REVENUE AND EXPENDITURE.

(a) REVENUE.

<i>Source</i>			1953	1954
			\$	\$
Commercial Canes	..	..	590.72	384.60
Vegetable Garden	..	..	2,844.85	3,538.78
Seedling Nursery	..	..	2,156.19	925.75
Economic Plants	..	..	1,314.75	2,640.50
Ornamental Plants	..	..	1,061.76	540.89
Mango Orchard	..	..	361.66	560.03
Citrus Orchard	..	..	14.54	73.22
Total	..	..	\$8,344.47	\$8,663.77

(b) EXPENDITURE, 1954

Capital Expenditure

			\$	\$
Fences	..	..	86.32	
Piping	..	..	175.63	
Sheds	..	..	26.30	288.25

Recurrent Expenditure

Salaries, Staff	..		2,710.65	
Commercial Canes	..		184.58	
Vegetable Garden	..		2,570.10	
Seedling Nurseries	..		2,283.90	
Economic Plants	..		1,291.80	
Ornamentals	..	..	1,134.43	
Mango Orchard	..		325.72	
Citrus Orchard	..		35.70	
Incidentals	..	..	161.76	10,698.64
Total Expenditure	..	..	..	<u>\$10,986.89</u>

SECTION III.

CROP INVESTIGATIONS

- 3.1. PINEAPPLES. Yield records from the pineapple plots at Cade's Bay and Christian Valley have been unsatisfactory owing to theft of fruits. The plots are now well established and provide a useful source of planting material.
- 3.2. ARROWROOT. In an attempt to resuscitate the arrowroot industry in the south-west part of the Island, an area of about 4 acres of land at Old Road was planted with arrowroot in July-August. Difficulty was experienced in collecting sufficient planting material as cultivation of the crop had almost died out. The plot, however, shows satisfactory growth.
- 3.3. TOBACCO. The experiments were adversely affected from the beginning by the protracted drought which began late in 1953 and continued throughout the crop, the plot at Follies had to be abandoned entirely, while transplanting at Greencastle and Piccadilly was delayed. In order to carry on with the trials, it became necessary at Greencastle to carry water over long distances that the plants might be established and sustained, while the water used at Piccadilly had to be carried by trucks from Greencastle at transplanting time; this caused much delay and eventually oversized plants had to be used. It was not until late November that the restricted areas at Greencastle and Piccadilly were actually established. The dry conditions affected growth throughout, but on the whole the vigour of the plants and their ultimate development were reasonably good.

The chief insect pest was the Sphinx caterpillar (*Protoparce sexta*) which had to be controlled by daily inspection of plants, and hand-picking.

Transplanting was between 13th October and 27th November, 1953.

Topping was from 20th December onwards.

Suckering was from 27th December onwards.

Reaping was between 20th January and 5th February, 1954.

The growing conditions were on the whole very unsatisfactory but served the purpose of demonstrating the practicability of producing fair-sized leaves even in dry weather.

In the absence of a flue-curing barn, the crop had to be air-cured and, even for this, the buildings available were not well-suited. The result was that the quality of the cured tobacco was poor.

The results of the experiment cannot be considered as a true indication of what the tobacco would have been under favourable weather conditions and with proper barns at the right localities to cure the tobacco.

Yields are given in the table below.

<i>Location</i>	<i>Type of Tobacco</i>	<i>Area Planted Acre</i>	<i>Weight cured leaves</i>	<i>Yield per Acre</i>
Greencastle	Virginia Pipe	0.15	152 lb	1013 lb
"	" Leaf	0.15	78 "	520 "
"	Kentucky 16 and Burley 1	0.20	184 "	920 "
Piccadilly	Virginia Pipe and Leaf	0.25	92 "	368 "

SECTION IV.

LIVESTOCK

4.1. VETERINARY. (a) *Bovine Tuberculosis*. During the year 1,100 animals were tested for tuberculosis. Of these, 164 (14.19 per cent) gave a positive reaction. The majority of the reactors have been slaughtered thus considerably reducing the incidence of tuberculosis in the Island.

(b) *Brucellosis*. No cases of brucellosis were discovered during the year.

(c) *Pyroplasmosis*. Seven cases of pyroplasmosis were diagnosed. They were treated successfully with the treatment detailed in the last report.

- (d) *Ectoparasitic Control*. Five dipping tanks were adequately maintained during the year and two new ones were constructed for operation in 1955. Peasants are alive to the value of regular dipping of their animals and made good use of their dipping tanks during the year.
- (e) *Endoparasitic Control*. The herds under observation, as mentioned in the last report, continued to make satisfactory progress and presented a satisfactory picture this year. Routine dosing with phenothazine sufficed to maintain them all in good health.
- (f) *Mycotic Dermatitis*. No further cases were observed of the interesting form of dermatitis mentioned in the last report and it was therefore not possible to carry out the investigational work planned.
- (g) *Bovine Infertility*. Further investigations were made to determine the cause of infertility in cattle.
Below are given brief notes on observations made:—

HERD I — COMMERCIAL DAIRY

General: Fifty-five graded Holstein animals of which 27 were cows; animals pastured on Antigua Hay Grass (*Andropogon sp*), Guinea Grass (*Panicum maximum*); pastures usually in poor condition; cotton seed meal fed to lactating animals.

History: Low milk production; cows in poor condition; no visible signs of oestrus in all but three animals with recurrent oestral cycles.

Findings: Rectal examination 10th August, 1954.

- (a) Twenty cows — retained corpora lutea — not pregnant
- (b) Four cows — small ovaries — not pregnant
- (c) Three cows — comparatively normal — not pregnant

Treatment: (a) Retained corpora lutea — fourteen cows — manual expression.

(b) Retained corpora lutea — six cows — 30 mg diethyl stilbestrol.

(c) Small ovaries — four cows — 30 mg diethyl stilbestrol.

(d) Normal — three cows — no treatment.

Findings: Rectal examination 10th November, 1954.

- (a) Fourteen cows — manual expression — 6 not pregnant, eight pregnant.

(b) Ten cows — 30 mg diethyl stilbestrol —
7 not pregnant, 3 pregnant.

(c) Three cows no treatment — 3 pregnant.

HERD II — COMMERCIAL BEEF RANCH

General: Eighty graded Nelthropp animals of which 27 were cows; animals pastured all year on Antigua Hay Grass and Guinea Grass; no concentrates fed; pastures usually in good condition.

History: Several cows in advanced pregnancy were lost during the drought; no visible heat periods.

Findings: Rectal examination — 9th July, 1954.

(a) Twenty-five cows — retained corpora lutea —
not pregnant.

(b) Two cows pregnant.

Treatment: None.

Findings: Rectal examination 17th November, 1954.

(a) 15 cows — pregnant.

(b) 5 cows — normal — not pregnant.

(c) 4 cows — retained corpora lutea — not pregnant.

Treatment: None.

HERD III — COMMERCIAL DAIRY

General: 153 graded Holstein animals of which 98 were of breeding age, animals pastured on Antigua Hay Grass; pastures maintained in good condition. Cows fed chaffed hay with molasses during milking.

History: Reduction in the number of expected births; few cows seen on heat.

Findings: Rectal examination 29th June, 1954.

(a) 41 cows — pregnant.

(b) 5 cows — small ovaries — not pregnant.

(c) 24 cows — retained corpora lutea.

(d) 28 cows — normal.

Treatment: Expressed corpus luteum in five cows.

In considering the above observations it should be remembered that unusually dry weather persisted until the end of July. Thereafter good rains fell and pastures improved in consequence. The results of the observations would appear to bear out the suggestions made in the last report that the physiological cycle of reproduction was interrupted by the generally low nutritional conditions resulting from the drought.

(h) *Communicable Disease Control.* No cases of communicable disease occurred during the year. The foot and mouth disease control regulations published in March, 1954, should provide adequate protection against the introduction of that disease.

(i) *Poultry Diseases.* No outbreaks of infectious diseases were recorded during the year.

SECTION V.

EXTENSION AND DEVELOPMENT WORK

5.1. *General.* The changes in organisation envisaged in the 1953 Report took place as scheduled, and on the 1st January, 1954, the Peasant Development Organisation came into being. The functions of this Section consist of those duties formerly carried on by the former Marketing and Loan Section, the Land Settlement and Development Board, and the Small Farmers Cultivation and Haulage Service Board. In view of the extensive activities and large staff of this Section, it was found essential to construct a separate building to serve as a fruit and vegetable depot and store-room. This building was nearing completion at the end of the year. On its completion, it is intended to use one section as the vegetable depot while the other will serve as store for fertilizers, packing material and other items of unallocated stores.

Towards the end of the year plans were being made to erect a vehicle shed to house the equipment of the Haulage and Cultivation Service Unit, and also a cotton purchasing depot, the object being to organise the various functions of the Section into as closely knit a unit as possible, so as to facilitate supervision by the Head of the Section.

The activities of the Section under the various Heads during the course of 1954 are discussed below.

5.2. *Land Settlements:* Listed hereunder are the settlement areas with which the Section was concerned during 1954.

(a) FREEHOLD SETTLEMENTS :

				Total Acreage	Total Arable Acreage Occupied	No of Allotments		
					1953	1954	1953	1954
1.	Clare Hall	..	..	226	226	226	126	126
2.	Skerritts	..	..	100	61	61	19	19
3.	Sawcolts	..	..	233	138	138	70	70
4.	Wallings	..	..	430	134	134	39	39
5.	Piccadilly	..	..	3000	853	853	499	499
				(approx)				
6.	Matthews	..	..	729	445	445	165	165
7.	Jonas	..	..	261	147	147	108	108
8.	Greencastle I	..	..	544	491	491	99	99
9.	The Folly	..	..	22	20	20	22	22
Total				5545	2515	2515	1147	1147

(b) LEASEHOLD SETTLEMENTS

1.	Mannings	.. ..	250	86	117	51	60
2.	Sheriffs	.. ..	240	(100 acres leased to Mill Reef Properties, Ltd)			
3.	Indian Town	.. ..	22				
4.	Coconut Hall	.. ..	257	160	152	109	66
5.	Southern Settlements		1712	462	493	269	331
6.	Northern Settlements		518	363	398	283	305
7.	Rooms	.. ..	851	357	354	298	284
8.	Comfort Hall I	.. ..					
9.	Brecknocks	.. ..		51	87	40	53
10.	Belvidere, Greencastle II		1635	822	907	432	443
11.	Orange Valley	.. ..	707	221	228	131	112
12.	Glanvilles	.. ..	256	182	206	124	130
13.	Matthews Extension	.. ..	35	30n	27	29	26
14.	Christian Valley	.. ..	679	210	236	102	120
15.	U.S. Army Base Area	.. ..		255	318	130	162
16.	U.S. Navy Base Area	.. ..		148	185	84	105
17.	Syndicate Tenantry Areas — Carlisle, Lamberts, etc., and Potters		488	272	324	211	234
18.	Lindsay Hill, Tennessee, Carrs Ghaut, etc.	.. ..	239	98	131	78	99
19.	Comfort Hall II, Nibbs		623	227	267	381	231
20.	Waldrons and Lyons	.. ..	382	233	249	143	113
21.	Rock Hill, Burkes, Sandersons, etc.	.. ..	510	220	354	227	260
22.	Table Hill Gordon	.. ..	162		159		42
23.	Cochranes	.. ..	370	102	105	51	33
24.	Bolans and Jolly Hill	.. ..	359	203	215	113	101
	Total	.. ..	10295	4702	5512	3286	3310

During the course of the year, Olivers Estate was purchased by Government for use as a Stock Farm. A dam was constructed in the area and extensive cleaning was carried out.

SETTLEMENT BUILDINGS ETC. The cistern at Orange Valley was repaired and the houses in the various areas were maintained.

SETTLEMENT COMMITTEES. These committees continued to function in an advisory manner. A large number of Settlement Committees were either revised or established. Thirty (30) General and forty (40) Committee Meetings were held during the course of the year.

TRACTOR PLOUGHING ETC., SETTLEMENTS. At the beginning of the year, it was discovered that a large area of land had reverted to scrub owing to the fact that equipment for ploughing the lands was not available. Private tractors were hired and together with the Department's tractors, 1750 acres of ploughing on the various Settlement areas and approximately 1500 acres of banking were done.

DEMONSTRATION PLOTS AND PLANT NURSERIES. In order to demonstrate to peasants proper agricultural practices, as well as to furnish planting material, Nurseries and Demonstration Plots were established at Sandersons, Army Base, Navy Base, Piccadilly, Waldrons, Mannings, Nibbs, Glanvilles and Belvidere II. In addition to the original Nurseries at Matthews, Cades Bay and Orange Valley, vegetable seedlings were also grown for distribution at Cades Bay, Piccadilly, Christian Valley and Mannings.

5.3. **MARKETING AND CREDIT.** The following table shows the total value in business run by the Section over the years 1949 - 1954.

TABLE VIII Value \$.000

ACTIVITY	1949	1950	1951	1952	1953	1954
Loans issued under Head VII	54	116	155	298	330	321
Loans and Interest recovered including C.D. and W. Schemes	34	70	109	167	264	151
Cane Payments Head VII (2)						
(5)	163	240	254	372	476	273
Cotton Payments Head VII (2) (4)	227	510	574	502	186	197
Peasant Development Turnover	15	12	12	35	24	30
Packing Materials Store purchased	—	5	4	7	—	—
Marketing Commission and Fees received	20	33	37	38	23	19
Rents collected	7	12	10	14	14	21

During the year a total of \$320,633.65 was issued as loans, mostly in kind, to 5,618 applicants. Interest at half cent per dollar per month collected during the year amounted to \$5,700.10.

SUGAR CANE. The following table shows the tonnage of cane dealt with by the Section since 1950.

<i>Year</i>	<i>Tonnage</i>
1950	28,816
1951	24,857
1952	35,185
1953	36,929
1954	17,567

Details of the 1954 crop are given in table below.

TABLE IX

<i>Settlements</i>	<i>Cane purchased</i>	<i>Gross Proceeds</i>
	Tons	\$
Army Base	256.4996	2939.04
Comfort Hall	385.1319	4405.90
Cochranes	222.4594	2544.93
Glanvilles	406.7511	8895.57
Richmond and Table Hill ..	407.522	4662.06
Double Hole	321.4933	3677.88
Marble Hill	1713.3760	29053.91
Clare Hall	445.5855	11078.09
Coconut Hall	406.4255	7609.36
Rooms	467.0260	11019.65
Jonas	985.2021	15332.43
Matthews	1403.4348	22780.86
Rock Hill	844.9238	9665.95
Red Hill	131.4108	3698.47
Carlisle	556.2948	6364.01
Lyons	1054.4992	12063.48
Parham	209.1965	2393.19
Mannings	79.2000	906.04
Greencastle	2282.1823	37630.66
Belvidere	3372.2883	55786.04
Christian Valley	338.3480	3870.70
Bolans	333.6450	3816.91
Cades Bay	276.6980	5574.28
Orange Valley	667.2850	11442.91
Total.	17566.8791	277212.32

COTTON. During the year, the Department purchased 699,109 lb. seed cotton from peasants and other vendors and shipped 759 bales (300 lb.) of MSI and 141 bales VH8 which was graded as follows:— „

COTTON GRADING

Season	M.S.I. Grades						<i>Total</i>
	<i>G1</i>	<i>G2x</i>	<i>G2</i>	<i>G3x</i>	<i>G3</i>	<i>G4x</i>	
1953-54	36	102	541	44	33	3	759

Season	V.H. 8 Grades						<i>Total</i>
	<i>G1x</i>	<i>G1</i>	<i>G2x</i>	<i>G2</i>	<i>G3x</i>	<i>G3</i>	
	11	—	64	55	9	2	141

The entire crop of cotton was sold to the Raw Cotton Commission at prices ranging from 79c. to 84c. per lb. for MSI variety and 90c. — 94c. per lb. for VH 8 variety. The stained lint was sold to a local purchaser at 44c. per lb. Seed was sold to Montserrat for crushing @ \$50.00 per ton ex Ginnery.

1954-55 CROP. Up to the time of planting the negotiation for the 1955 crop was still in progress.

MARKETING DEPOT. The following tables show the volume of work carried on by the Marketing Depot.

Fruit & Vegetables	1st Jan-1954			Purchases			Sales			Stock at 31-Dec. 1954	
	Quantity lb.	Value \$ c.		Quantity lb.	Value \$ c.		Quantity lb.	Value \$ c.		Quantity lb.	Value \$ c.
Blackeye Peas	..	..	..	68	12.24		68	20.70		—	—
Carrot	..	..	..	26½	5.03		26½	5.30		—	—
Cucumber	..	..	..	34	5.82		34	6.12		—	—
Cabbage	..	..	..	611½	153.65		611½	161.64		—	—
Corn (Cob)	..	..	..	30131	1266.23		27397½	1569.53		—	—
Corn (Grain)	..	..	..	984	57.84		860	74.56		—	—
Kohl Rabi	..	..	..	89	14.42		87	15.18		—	—
Lima Beans	..	..	..	95¼	18.00		95¼	19.05		—	—
Mangoes	..	..	..	2986	128.51		2986	135.28		—	—
Onions	..	..	..	9500¾	789.11		8947¾	967.86		—	—
Pigeon Peas	..	..	..	473	66.22		89½	19.94		383½	53.96
Pumpkins	..	..	..	2138	49.65		1557¾	73.07		243	4.96
Peanuts	..	..	..	316	100.52		305	109.52		—	—
Red Beans	..	..	..	2566	513.20		116	27.86		2438	487.60
String Beans	..	..	..	219½	38.64		219½	40.83		—	—
Sweet Potatoes	..	..	..	6463½	452.44		11624½	693.50		—	—
Sweet Pepper	..	..	..	118¾	19.25		118¾	20.57		—	—
Squash	..	..	..	22¼	5.08		22¼	5.34		—	—
Tomato	..	..	..	2406¾	378.71		1692¼	346.96		481	53.61
White Beans	..	..	..	1092½	174.80		299	58.61		793½	126.96
Yams	..	..	..	6611¾	422.01		19801	1953.89		—	—
		874.45			5116.36			6325.31			726.82

Insecticides & Fertilizers	Stock at 1 Jan. 1955		Purchases		Sales		Stock at 31 Dec. 1954	
	Quan.	Value \$	Quan.	Value \$	Quan.	Value \$	Quan.	Value \$
DDT Powder	—	—	448	337.92	187	187.00	261	196.87
Lead Arsenate	2064½	716.28	1248	536.24	2012¼	872.47	1282¼	548.23
Caroga	28	6.03	3000	1083.43	687½	277.24	2340½	842.58
DDT Emulsion	32.125	94.13	60	429.03	41.5	223.20	50.75	364.20
Agrocide	911	113.42	—	—	50	7.50	831	107.20
Ammophos	19	90.54	—	—	—	—	19	90.54
..	505	10537.99	1000	19180.12	497	11922.80	1008	19347.05
Sodium Fluochloride	225	32.67	—	—	—	—	225	32.67
Pen-Manure	—	—	2109	1687.20	1448	1446.00	663	30.40
Sulphate Ammonia	743	9857.31	997	12013.37	427	6577.72	1313	16205.70
Superphosphate	—	—	30	2.70	30	2.70	—	—
		21448.37						
		21448.37						
		35270.01						
		21516.63						
		38265.44						

PACKING MATERIALS

Jelly Bottles	..	..	233	10.93	—	—	192	11.52	31	1.52
Pine Apple Crates	..	..	265	63.78	—	—	—	—	265	63.78
Tomato (20 lb.) Crates	..	..	1356	200.15	—	—	10	2.00	1346	198.67
Tomato (30 lb.) Crates	..	..	2948	1915.84	—	—	—	—	2948	1915.84
Vegetables	..	..	31	11.10	—	—	—	—	31	11.10
Hot Sauce Labels	..	..	100	.24	—	—	—	—	100	.24
Lime Labels	..	..	1247	10.79	—	—	—	—	1247	10.79
Tomato Paste Labels	..	..	4950	30.10	—	—	—	—	4950	30.10
Rubber Stamps	..	..	—	56.49	—	—	—	—	—	56.49
Wrapping Papers	..	..	4861	735.46	—	—	—	—	4861	753.46
Wrappers	..	..	2200	1390.03	—	—	—	—	2200	1390.03
Wood Wool	..	..	1000	163.18	—	—	—	—	1000	163.18
Jute Bags	..	..	7866	4289.88	1300	271.12	2036	1465.92	7130	3538.18
Tomato Crate Labels	..	..	7882	107.20	—	—	—	—	7882	107.20
				8985.17	271.12	1479.44	8240.58			

Besides this, seeds to the value of approximately \$6000.00 were sold during the course of the year.

5.4. SMALL FARMERS CULTIVATION AND HAULAGE SERVICE. On December 28th, 1953, a Board appointed by Government took over from the defunct Small Farmers Cultivation and Haulage Board, 6 tractors, 13 cane carts, 6 ploughs, 1 disc harrow, 2 trucks and 1 pick-up. These vehicles were handed over to the Peasant Development Officer. After inspection of these units it was found necessary to place 5 tractors and 5 ploughs in a workshop to undergo general repairs.

The repairs cost the Department a considerable amount of money, and at the end of December, 1954, one tractor and one plough are yet to leave the workshop. A Board condemned nine of the cane carts which were sold by tender.

In January, 1954, one truck and one pick-up were taken over from the Land Settlement Board. It was evident that these vehicles had been given some sort of maintenance, but towards the end of the year, the pick-up was found uneconomical to maintain which ended in an auction sale.

Eight St. Kitts cane carts, three rubber wheeled tractors, four ploughs and two crawler tractors fitted with hydraulic lift and tool bar, were bought and have been brought into use during the year.

The following are the machines held:—

Tractors — Crawler	3
Tractors — Rubber wheeled	8
Total Tractors	11
Trucks	3
Pick-Up	1
Ploughs	12
Disc Harrow	1
Cane Carts	12

The rubber wheeled tractors have been used for ploughing and haulage, and because of the type of soil and rough lands over which these machines had to operate, low out-put per hour and frequent changing of tyres and tubes has been necessary. It was observed that during the harvesting period tractors and carts with men to load them had to travel from field to field to find work which resulted in loss of time and heavy cost of maintenance.

The employees co-operated, and cheerfully carried out the various duties they had to perform. An accident occurred during the year's operation, a ploughman falling from the tractor on to the plough and damaging his right leg. He received compensation accordingly.

Refuelling etc. of the vehicles presented some difficulty because of operating without a service truck. This part of the service was rendered by the Antigua Syndicate Estates, but towards the end of the year it was withdrawn. This service was of great value in the field of operation. Preventive maintenance of the machines was done by two men under the supervision of an officer. Daily maintenance was undertaken by the operators of the machines.

In spite of all these difficulties, 646 acres of lands were ploughed by the Unit, 114 acres reploughed and 552 acres banked. The three lorries were responsible for the transportation of all the peasants' cotton from the purchasing centres to the ginnery and they also performed such miscellaneous duties as the transporting of artificial fertilizers, pen-manure and scum to the various peasants.

Both the tractors and the trucks also assisted in the transportation of peasants' canes, particularly in Marble Hill district. It is envisaged that when the minor problems are overcome, the Machinery Section will be of substantial service in improving cultivation and production in the Island.

5.5. SOIL AND WATER CONSERVATION. The departmental soil conservation Unit was absorbed into the Peasant Development Section as from the beginning of 1954. Field officers of that section who are in charge of Peasant Settlements are now responsible for soil and water conservation in the areas which they control. All tractor ploughing and ridging is as nearly on the contour as is practicable.

5.6. FOREST CONSERVATION. The two Protection Officers of the Department continued with the assistance of part-time Rangers, to endeavour to restrict to a minimum, damage to the Forest Estate of the Presidency. Permits were issued sparingly for the clearing of hillsides. Depredation in the forest areas are largely for the purpose of burning charcoal which is an important domestic fuel in Antigua. Offenders were prosecuted and 34 convictions were secured.

Apart from this protection work no action was possible in the direction of forest improvement, nor was any further progress possible with the land Utilization Survey.

5.7. BOARDS, COMMITTEES, CONFERENCES. During the year the Agricultural Superintendent served:—

- (a) As Secretary of the Antigua Agricultural and Commercial Society.
- (b) As Chairman of the Sugar Cane Rehabilitation Finance Committee.
- (c) As Secretary-Chairman of the Antigua Cotton Growers Association.
- (d) As member of the Sugar Cane Investigation Committee.

The Peasant Development Officer served on the Industrial Development Board. The Agricultural Superintendent attended the following meetings outside of the Colony during the year:—

- (a) The Advisory Committee of the Sugar Cane Breeding Station: held in Barbados.
- (b) The Provisional Governing Body of the Eastern Caribbean Farm Institute: held in Trinidad.

SECTION VI.

FISHERIES.

- 6.1. GENERAL. During the year work was concentrated on investigation and experiment provided for by Colonial Development and Welfare Scheme D 2081 for the purpose of determining new methods of fish capture in order to increase the supply of fish. In the latter part of the year an additional grant to this scheme was provided.

Dr. Hickling, Fisheries Adviser, visited Antigua in February during which time he was shown what progress was made as provided for under scheme D 2081. His advice was obtained on many problems confronting the development of the Fishing Industry. He emphasized strongly on the mechanization of the Fishing Fleet and the need for fishermen to spend longer hours at sea. Coir rope for use on fish-pot was also introduced during this visit.

In December, Mr. Wiles, Fisheries Officer, Barbados, visited Antigua for the purpose of advising on the operation of loans to fishermen and on future flying-fish development.

- 6.2. INVESTIGATION AND EXPERIMENT. Two fishermen from Barbados along with two local fishermen with one boat at their disposal commenced operations on the capture of flying-fish in February. In the three months that followed, unfavourable weather condition restricted many operations, but in April one encouraging catch of 300 fish was taken. However, in May more favourable catches were recorded, the largest being 4600 fish, taken in one operation. Favourable catches of 500 — 1500 fish continued until the middle of June when the investigation period closed.

A visit to Montserrat arranged by His Excellency the Governor, for the purpose of investigating the possibility of catching flying-fish there, yielded very favourable results. In three operations when local fishermen were taken out for instruction purposes, 2500 flying-fish, nine dolphins and six sharks were caught. It was observed that flying-fish were caught at a much shorter distance than off Antigua and that the fish were slightly larger.

- 6.3. MARINE ENGINE. A petrol Marine engine of the Maritime Province type was obtained and installed in the confiscated sloop "Daisylyn". A six months trial period revealed a defect in the make-and-

break system which was a source of continuous trouble; the makers were kept informed of the engine's performance and through this correspondence it was apparent that the defect could not be remedied. In view of this and the imminent danger of fire when using petrol, this motor was not considered suitable for the mechanization of a fishing fleet.

6.4. ICE BOXES. A fisherman who spent from two to five days at sea and who also had a live-well in his boat was selected for experiments on the use of ice boxes. It was known that certain types of fish will not live in a live-well and others that generally do, die for no apparent reason; which necessitated some other means of preservation. As a result of this experiment, the live-well has been removed and a larger ice-box installed.

6.5. CRAW FISH. A specimen craw-fish trap was obtained from British Honduras as recommended by Dr. Hickling. Several were made of locally grown bamboo, twelve of which were put into operation; but within one month of negligible result, the whole lot were destroyed by heavy swells.

6.6. FISH MARKET. The renovation of the building was completed, an electrically driven sea-water pump installed for cleaning, etc. The market was opened to the public in May.

6.7. STATISTICS. Information of catches taken at seven points of a possible twelve, totalled 536,729 lb. of fish taken during the year. A graph of the monthly total revealed a drop in catches during the months of July, August and September. This period is generally calm with little or no wind and clearly indicates the need for mechanization of the fishing fleet if a constant supply of fish is to be maintained.

6.8. TILAPIA. Progress made in previous years on the development of *Tilapia* has been considerably retarded as many areas which were stocked went dry and remained so for some time during the year.

6.9. BUBU TRAPS. This type of fish trap was introduced by Dr. Hickling and gave catches equal to those of the arrow-head. Difficulty in transportation due to their height lessen their adoption by fishermen. Nevertheless a certain feature of the bubu traps, viz., the anchor system, has been adopted for use in areas where strong currents are prevalent.

6.10. FISH FENCES. Two types of fences were constructed at Cades Bay. Favourable results were recorded in the first two months, one averaging 30 lb. of fish per day and the other 10 lb. In the following four months the catches reduced to 10 lb. and 21 lb. per day respectively. This method of fishing has some value but should only be considered as an addition to other methods.

6.11. FISHERIES COMMITTEE. The island was divided into fourteen fishing districts and one in Barbuda, and a committee formed in each for the purpose of

- (a) laying the foundation for co-operative movement among fishermen;
- (b) ensuring the registration of bona-fide fishermen;
- (c) recommending registered fishermen considered as good risk for loans under Group Guarantee System.

During the year 677 bona-fide fishermen were registered.

6.12. CREDIT. A sum of \$55,000 was granted for loans to fishermen to assist in the development of the fishing industry. This amount was divided as follows for

(a) Improved Fishing Methods	\$30,000
(b) Repairs and Purchase of Equipment ..	15,000
(c) Group Guarantee Loans	10,000

Proposals were submitted for making loans available to fishermen in 1955.

SECTION VII.

COLONIAL DEVELOPMENT AND WELFARE SCHEMES

D. 1701. LAND UTILIZATION SURVEY. This scheme provides for a land Utilization Survey. The preparation of the large-scale maps by the Director of Colonial Surveys was completed towards the end of the year and plans are being made for further work in Antigua, using these maps as a basis.

Expenditure during the year was \$960.

D. 1889. FISHERIES OFFICER. The scheme covered the payment of the Fisheries Officer, his transport and the cost of his equipment. A sum of \$3,498.58 was expended under this scheme during the year. From 1955, these items will be financed locally.

D. 2005. ACQUISITION ANTIGUA SUGAR ESTATES TENANTRY AREAS. These areas came under the administration of the Peasant Development Section as was envisaged in the Annual Report of 1953.

Expenditure under this scheme during the year amounted to \$4,783.47. This sum was used to assist in the survey and development of the various Tenantry Areas and represents the balance available for this purpose.

The full amount of this scheme was \$72,000.00.

D. 2081. FISHERIES DEVELOPMENT. Under this scheme provision was made for flying fish investigation, the development of a fish market, the compilation of statistics, the demonstration of improved fishing method and propaganda work. The balance of the funds available under the scheme amounting to \$9,418.34 was expended during the year. Hereafter the cost of this work will be met from local resources.

D. 2081A. PURCHASE AND MAINTENANCE OF A FISHING BOAT FOR INVESTIGATIONAL WORK. A special grant of \$3,313.53 was obtained and used for purchasing and running a boat for fisheries investigation. Further costs of running the boat will be met from local resources.

D. 2107. DIRECTOR OF AGRICULTURE. Under this scheme Mr. M. Park, O.B.E., late Director of Agriculture, Eastern Region, Nigeria, was appointed as Director of Agriculture, Antigua, for a period of three years. He assumed duties on 22nd December, 1954.

D. 2122. LIVESTOCK DEVELOPMENT BARBUDA. A start was made with this scheme which aims at providing suitable areas for rotational grazing and watering points, and stud services for the improvement of livestock in Barbuda. Catching pens were repaired, clearing was carried out for the extension of the main-wire line and for the fencing of the grazing areas. The scheme is controlled by the Veterinary Officer, Antigua.

The full amount provided for the scheme is \$36,480. Of this \$16,882.46 was spent during the year.

D. 2184. CONSTRUCTION OF TOBACCO BARN. The barn for experimental flue-curing of tobacco was constructed at Greencastle. The burners for the furnace had not arrived by the end of the year but otherwise the building was completed.

Expenditure was \$3,136.68.

D. 2223. LIVESTOCK DEVELOPMENT. ANTIGUA. This scheme for which a total sum of \$83,845 is provided is administered partly by the Peasant Development Officer and partly by the Veterinary Officer.

The Peasant Development Officer is responsible for the development of Olivers Estate, which was purchased during the year from a private individual to provide a grazing area for the people in the vicinity of All Saints, Freemans Village, Sea View Farm and Buckleys.

Expenditure under this scheme for the year amounted to \$11,555.03 made up as follows:—

(a) Clearing paddock Olivers	\$4,355.03
(b) Purchase Olivers	7,200.00

A large area of this paddock was cleared and preparation was made for the establishment of a gliricidia hedge. It is also anticipated that one or two dams will be made in the area and the work of this project had commenced at the end of the year.

The Veterinary Officer is responsible for that part of the scheme whereby controlled grazing areas will be established at Coolidge Field and Greencastle Settlement Areas. Work commenced in August and consisted of clearing acacia shrub and purchasing fencing materials. It is hoped to have these schemes in full operation by October, 1955.

The total expenditure on the whole scheme during the year was \$40,067.38.

D. 2237. ACQUISITION OF LANDS AT FIVE ISLANDS. This scheme provides for the acquisition of land at Five Islands for village extension and for providing lands for peasant settlement and grazing. The normal routine of acquisition is proceeding.

SECTION VIII.

LEGISLATION AFFECTING THE DEPARTMENT OF AGRICULTURE

The following legislation affecting the Department of Agriculture was enacted during 1954:—

1. Leeward Islands Ordinance No. 6 of 1954. The Praedial Larceny (Prevention) Act, 1954. An Act to make better provision for the prevention of praedial larceny.

2. Leeward Islands Ordinance No. 7 of 1954. The Agricultural Small Holdings (Amendment) Act, 1954. An Act to amend further the Agricultural Small Holdings Act, 1938, affecting the conditions of tenancy and the payment of compensation for crops.

3. Antigua Ordinance No. 8 of 1954. The Acquisition of Antigua Syndicate Estate Tenantry Areas (Loan) Amendment Ordinance, 1954. An Ordinance to amend the Acquisition of Antigua Syndicate Estate Tenantry Areas Loan Ordinance, 1953, making minor amendments.

4. Antigua Ordinance No. 10 of 1954. The Development (Cotton Ginnery and Electricity) Loan (Amendment) Ordinance 1954. An Ordinance to amend, by increasing the amount of the loan, the Development (Cotton Ginnery and Electricity) Loan Ordinance.

5. Antigua Ordinance No. 12 of 1954. The Cotton Export Ordinance 1954. An Ordinance to regulate the export of clean lint cotton from the Presidency.

6. Statutory Rule and Order No. 3 of 1954. The Aid to Pioneer Industries (Manufacture of Vegetable Oil) Order, 1954. An Order made by the Governor-in-Council under Section 3 (I) of the Aid to Pioneer Industries Ordinance, 1950, (No. 9 of 1950), declaring vegetable oil a pioneer product.

7. Statutory Rule and Order No. 10 of 1954. The Animals (Importation) Control (Amendment) Regulations, 1954, made by the Governor-in-Council under Section 14 of the Animals (Diseases and Importation) Ordinance, 1953, (No. 3 of 1953), adding St. Lucia to the schedule of places from which the import of cats and dogs is permitted.

8. Statutory Rule and Order No. 11 of 1954. The Foot and Mouth Disease Regulations, made by the Governor-in-Council under Sections 12 and 14 of the Animals (Diseases and Importation) Ordinance covering the prevention of Foot and Mouth Disease.

9. Statutory Rule and Order No. 18 of 1954. The Sugar Export Cess (Amendment) Regulations, made by the Governor-in-Council under Section 7 of the Sugar Export Cess Ordinance, 1947, (No. 10 of 1947), providing for payments from the Rehabilitation Fund or the Labour Welfare Fund to the Peasant Development Office to be utilized on behalf of peasant sugar cane growers.

10. Statutory Rule and Order No. 19 of 1954. The Animals (Importation) Control (Amendment No. 2) Regulations 1954, made by the Governor-in-Council under Section 14 of the Animal (Diseases and Importation) Ordinance, 1955, (No. 3 of 1953), making technical amendments to the regulations aimed at excluding foot and mouth disease.

11. Statutory Rule and Order No. 28 of 1954. Declaration made under Section 3 of the Land Acquisition Act, 1944, (No. 11 of 1944) for the acquisition of an area of land at Purham for the erection of a Market Shed and Abattoir.

12. Statutory Rule and Order No. 30 of 1954. Declaration made under Section 3 of the Land Acquisition Act, 1944, (No. 11 of 1944) for the acquisition of part of Five Islands Estate mainly to provide small holdings and grazing land for peasants.

13. Proclamation dated 7th October declaring a Close Planting Season for cotton from 16th October 1954 to 15th August, 1955.

MALCOLM PARK,
Director of Agriculture.

APPENDIX I Rainfall in Antigua 1954

No.	Stations	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Totals
1.	Antigua Sugar Factory	..	3.02	1.14	.64	3.50	3.15	3.92	7.70	10.87	5.09	2.54	3.76	48.09
2.	Belmont	..	1.68	1.72	.88	4.58	1.95	3.34	8.32	10.63	5.03	3.61	4.03	46.65
3.	Belvidere	..	2.51	1.21	.68	2.10	2.66	5.36	9.36	10.61	7.49	3.58	2.59	49.11
4.	Betty's Hope	..	3.06	1.77	.99	2.23	2.37	3.53	6.87	6.90	4.79	1.59	2.95	37.23
5.	Blackmans	..	2.61	1.88	1.28	3.31	2.11	2.53	6.68	8.80	5.82	1.03	3.30	40.67
6.	Blakes	..	2.24	1.80	.63	.55	1.83	2.70	6.69	8.05	3.67	2.15	1.97	33.07
7.	Blubber Valley	..	2.42	1.76	.97	.60	1.31	4.68	7.91	8.99	5.60	3.29	2.80	42.91
8.	Body Ponds	..	1.63	—	.12	—	2.58	4.68	4.58	7.51	4.53	.49	.88	25.53
9.	Burkes	..	1.98	1.34	.85	1.33	2.12	3.49	7.62	9.27	4.67	2.19	3.05	38.69
10.	Cades Bay	..	1.34	1.95	.86	.79	1.48	2.61	8.14	7.86	6.92	4.11	2.53	42.07
11.	Cassada Gardens	..	2.38	1.94	.89	3.08	2.19	2.82	6.19	9.21	4.47	1.63	2.37	37.47
12.	Cedar Valley	..	3.48	1.92	.88	.25	3.65	3.36	6.18	9.77	4.68	1.61	2.40	40.66
13.	Collins	..	2.33	1.40	.60	.16	1.52	2.68	6.54	6.03	4.70	1.28	3.06	32.49
14.	Comfort Hall	..	3.72	1.65	1.20	.29	2.15	3.36	7.72	7.28	4.56	1.59	2.48	38.11
15.	Cotton	..	2.21	1.37	.93	.21	3.15	2.26	4.79	5.91	.44	2.02	2.70	27.96
16.	Cotton Station	..	3.20	1.44	.02	.88	3.50	3.61	6.54	9.35	4.63	1.84	2.79	43.19
17.	Country Board of Health	..	2.86	1.75	1.21	.62	3.84	4.17	7.45	8.52	4.22	2.41	2.82	42.85
18.	Creekside	..	3.79	1.65	1.31	.67	2.33	3.20	9.56	9.56	7.78	3.87	4.47	52.15
19.	Delaps	..	2.23	1.23	1.06	.48	1.32	2.11	7.34	8.12	3.58	1.89	2.97	34.97
20.	Deckyard. The	..	1.73	.92	.87	.49	1.65	3.76	6.96	7.27	4.51	2.53	3.20	36.67
21.	Donovans	..	1.64	1.93	.80	.34	3.00	3.26	5.93	9.54	4.47	2.28	3.75	39.37
22.	Fitches Creek	..	3.73	2.32	1.58	.64	5.13	4.19	10.80	14.14	7.02	2.15	3.48	58.78
23.	Five Islands	..	2.69	1.12	.50	.20	2.22	3.12	5.56	8.29	4.75	1.61	3.03	36.21
24.	Friars Hill	..	3.04	2.45	1.08	.49	3.83	3.47	5.93	9.91	4.62	1.54	3.08	42.76
25.	Orange Valley	..	2.25	.90	.85	.65	2.06	3.13	9.52	8.45	8.44	3.86	2.10	46.04
26.	Gaynors	..	1.64	1.53	.60	.22	1.39	2.73	5.18	6.29	4.69	1.26	3.24	30.33
27.	Gilberts	..	2.86	2.03	.75	.33	1.82	2.60	5.67	4.99	.58	.92	3.12	27.37
28.	Greencastle	..	3.60	1.97	1.43	.73	1.96	4.78	8.86	8.40	6.60	2.87	3.38	48.10

APPENDIX I (Continued)
Rainfall in Antigua — 1954

No.	Stations	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Totals	
29.	Hodges Bay	..	2.46	1.48	.30	.19	2.08	2.77	2.98	4.14	5.91	3.68	1.70	3.58	31.28
30.	Langfords	..	2.81	1.69	.80	.35	1.95	3.23	3.12	7.53	10.27	4.31	1.96	2.02	40.04
31.	Long Lane	..	2.09	1.35	.87	.77	1.12	1.51	2.52	6.07	7.28	4.07	1.66	3.30	32.61
32.	Lyons	..	2.57	1.41	1.09	.17	1.35	2.24	2.93	6.20	6.85	4.43	1.53	2.90	33.72
33.	Montpelier	..	2.93	1.82	1.04	.59	1.18	2.30	2.72	6.16	7.36	4.78	2.01	3.16	36.05
34.	Morris Looby	..	1.91	1.23	.98	.23	1.20	1.91	2.09	6.74	6.94	3.24	1.78	2.88	31.13
35.	New Division	..	4.11	1.33	.54	.10	1.17	2.30	2.99	8.01	9.21	6.95	4.28	4.05	45.04
36.	North Sound	..	3.62	1.80	.78	.76	2.43	2.14	3.37	6.22	11.03	4.45	1.74	3.32	41.66
37.	Pares & Oochranes	..	2.46	1.31	.73	.41	1.51	1.97	2.60	6.35	8.38	4.25	1.43	3.28	34.68
38.	Parham Lodge	..	2.45	1.74	.89	.32	3.94	1.85	2.77	6.02	7.52	4.84	2.67	2.83	37.89
39.	Parham New Works	..	3.30	1.70	.62	.29	1.42	1.95	2.91	6.37	9.33	5.30	1.22	3.50	37.91
40.	Parrys & Diamonds	..	2.09	1.57	.70	.49	1.60	2.63	3.85	8.09	11.16	5.69	2.22	4.01	44.15
41.	Paynters	..	1.87	2.82	.35	.23	2.94	1.83	2.69	6.84	10.16	4.80	1.71	2.29	38.53
42.	Piccadilly	..	2.23	1.43	1.12	.28	1.21	2.45	2.52	8.14	10.06	5.22	2.24	3.00	39.90
43.	Rooms	..	2.51	1.57	1.04	.15	2.15	2.31	2.76	6.89	8.66	4.04	1.10	1.10	34.28
44.	St. John's	..	2.57	2.10	1.32	.73	3.92	2.89	4.38	7.78	7.85	5.39	.25	4.87	44.05
45.	Thibous	..	1.59	1.63	.37	.18	2.40	2.67	4.38	5.73	9.27	5.10	1.63	2.69	37.64
46.	Vernons	..	3.38	1.79	.58	.60	1.83	2.05	3.02	6.00	9.35	3.76	1.64	3.24	37.24
47.	Wallings Dam	..	.58	.50	.12	.12	.53	1.83	3.73	8.67	10.05	7.64	3.29	4.32	41.38
48.	Willis Freeman	..	1.96	1.34	1.04	.50	.91	1.77	2.28	6.40	7.39	3.29	1.96	2.93	31.77
49.	Yeptonys	..	2.94	1.42	.84	.40	2.59	2.42	3.54	6.29	8.73	4.50	1.98	2.87	38.52
50.	Yorks	..	2.43	1.31	1.10	.31	1.38	3.10	3.92	6.82	7.75	4.85	2.03	2.56	37.56
Total (50 Stations)		..	126.73	80.06	44.55	21.59	109.19	122.07	164.45	348.05	432.03	243.08	103.77	150.96	1946.53
Means (50 Stations)		..	2.54	1.60	.89	.43	2.18	2.44	3.29	6.96	8.64	4.86	2.08	3.02	38.93
Means 1933-1954		..	2.95	1.56	1.56	2.04	3.84	3.19	3.43	4.90	5.68	5.20	5.57	3.18	43.10
Barbuda (Codringtons)		..	1.51	1.15	.16	.40	.57	1.83	1.83	3.25	6.56	2.78	.75	11.48	35.27

APPENDIX II Mean Monthly Rainfall in Antigua 1933 — 1954

No. of Stations	Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
59	1933	1.98	.92	1.07	2.62	4.69	2.60	5.28	1.87	8.40	3.04	6.18	2.85	41.50
60	1934	1.56	.64	2.05	.61	1.11	3.51	2.81	7.42	3.90	1.62	10.74	5.89	41.86
60	1935	1.33	1.15	.96	1.96	2.93	2.41	4.36	3.24	4.35	8.70	5.65	2.12	38.31
60	1936	1.65	1.26	.93	2.84	8.44	3.61	5.92	5.36	10.15	8.14	4.41	7.23	59.94
60	1937	8.54	3.07	.79	4.39	1.22	1.03	3.86	5.15	4.99	3.47	8.13	2.64	44.28
58	1938	2.07	.81	1.20	.61	1.06	11.58	3.10	6.39	3.00	3.95	8.41	2.67	44.75
59	1939	1.64	1.11	1.72	.25	.91	1.06	3.00	1.29	1.86	9.42	5.52	1.92	29.70
66	1940	3.41	3.09	2.13	2.41	4.31	2.71	2.15	3.04	3.04	2.41	6.79	1.88	37.37
66	1941	3.10	.71	1.63	2.10	12.77	3.59	3.02	4.07	5.25	2.95	8.06	2.22	49.37
56	1942	5.61	1.76	.55	4.43	2.62	4.45	3.39	6.57	2.67	4.53	10.56	2.81	49.95
54	1943	3.99	1.91	1.63	1.01	7.70	5.44	1.96	6.84	3.40	5.69	4.17	2.34	49.08
54	1944	2.99	1.32	.39	.55	2.83	3.84	6.46	4.53	4.40	8.69	3.48	1.55	37.13
55	1945	1.40	2.44	1.44	1.59	3.97	2.42	3.38	4.62	6.57	7.59	1.88	3.60	40.90
51	1946	2.12	1.09	1.93	4.53	3.21	1.97	1.32	3.76	5.29	2.32	4.68	4.89	37.11
49	1947	3.62	.50	.61	.94	3.77	1.50	2.57	1.68	7.42	4.46	1.00	.79	28.84
48	1948	2.44	.93	1.51	.90	2.55	3.98	1.86	2.28	4.64	7.02	5.28	3.92	36.41
48	1949	1.73	2.40	4.42	3.11	1.45	3.09	3.46	3.37	12.31	6.28	3.35	3.78	49.03
40	1950	5.89	2.58	1.30	2.25	1.74	1.56	1.63	11.23	4.56	7.38	5.07	2.88	48.07
41	1951	3.83	2.34	1.11	2.42	9.46	2.84	3.54	7.88	10.51	5.16	3.62	6.42	59.13
40	1952	2.95	1.72	2.90	3.22	5.11	4.74	5.96	8.39	6.46	5.45	7.02	1.34	55.26
43	1953	1.45	.94	3.10	1.74	1.31	.93	3.09	1.68	3.13	1.34	6.43	3.15	28.29
50	1954	2.54	1.60	.89	.43	2.18	2.44	3.29	6.96	8.64	4.86	2.08	3.02	38.93
Monthly means 1933-1954		2.95	1.56	1.56	2.04	3.84	3.19	3.43	4.90	5.68	5.20	5.57	3.18	43.10

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